

Rule 74.17 Solid Waste Disposal Sites (Adopted 9/17/91)

A. Applicability

The provisions of this rule shall apply to all solid waste disposal sites that have received more than 500,000 tons of decomposable solid waste. The refuse density shall be assumed to be 1,300 pounds per cubic yard and the decomposable fraction shall be assumed to be 70 percent by weight unless other site specific factors are submitted to and approved by the Air Pollution Control Officer (APCO).

B. Requirements - Gas Collection System

1. The owner shall install and operate a gas collection system which prevents overdraw that can cause fires or damage to the collection system while collecting, in each quarter, at least 90 percent of the target volume established for that quarter.
2. The owner shall use the procedures in Subsection H.1 of this rule to establish baseline conditions. The owner may re-establish baseline conditions using the procedures in Subsection H.1 at any time. Each time that baseline conditions are achieved, the owner shall measure and record:

- a. The baseline gas collection flowrate, in standard cubic feet per minute (SCFM) for the entire landfill.
- b. The baseline oxygen concentration in the collected landfill gas stream at the inlet to the control device before adding combustion air.

The owner shall notify the APCO at least 5 days prior to each establishment of baseline conditions so that APCD personnel may be on site to confirm that baseline conditions exist.

3. The owner shall measure and record the oxygen concentration at the inlet to the control device on at least 4 days each week. A single sampling run lasting at least twice the response time of the analyzer shall be sufficient for this purpose. Each sampling run shall establish the oxygen concentration for all preceding hours retroactive to the hour of the previous measurement.
4. The owner shall monitor the total gas collection flowrate for the landfill at least once every 15 minutes and keep records at least once per hour. A chart recorder shall be sufficient for recording this data.
5. Within two weeks after the end of each quarter the owner shall determine the overall effectiveness of the gas collection system for the past quarter. To make such a determination, the owner shall meet the following requirements:
  - a. The owner shall establish a quarterly target for the volume of landfill gas to be collected. The target volume shall be the time weighted average of all baseline collection flowrates (SCFM) established pursuant to Subsection B.2.a during the quarter, multiplied by the number of minutes in the quarter.
  - b. Each hourly flowrate record during which the measured oxygen concentration (established by Section B.3) exceeds the current

baseline oxygen concentration (established by Section B.2.b) by a measured value greater than 2 percent oxygen, shall be corrected using the following equation:

$$\text{Corrected Flow} = \text{Measured Flow} \times \frac{20.9 - \text{O}_2 \text{ measured (\%)}}{20.9 - \text{O}_2 \text{ baseline (\%)}}$$

- c. The owner shall use this corrected flowrate data to calculate the total volume of gas collected for the quarter.
- 6. If the volume of gas collected in any quarter is less than 90 percent of the target volume established for that quarter, the owner shall be in violation of this rule and shall re-establish baseline conditions pursuant to Subsection B.2 of this rule within the first 2 weeks of the following quarter.
- 7. Notwithstanding the requirements of Subsection B.6, the owner of any active landfill shall re-establish baseline conditions pursuant to Subsection B.2 of this rule at least once every 6 months.
- 8. The owner shall:
  - a. Maintain, monitor, operate, and improve as necessary the gas collection system and landfill cover to prevent leaks from:
    - 1) All locations on the surface of the landfill covered by final cover.
    - 2) All locations on the surface of the landfill which have been covered by intermediate cover for over 6 months.
    - 3) All locations along the gas transfer path of the gas collection system.

When a leak is identified, it shall be conspicuously tagged with a marker which displays the date of identification. The marker shall not be removed until the leak is repaired. (Markers placed by APCD personnel may be removed only by APCD personnel, except as necessary during the repair of leaks.) Within 15 calendar days of identification, each leak shall be repaired to a leak free state unless such repair requires excavation. Where repair requires excavation, the owner shall submit an excavation plan for approval by the APCD which shows that repairs will be made promptly and which specifies the expected date of completion.

A leak shall be in violation of this rule if the leak is not repaired within 15 calendar days of identification, or if an excavation plan is not submitted to the APCD within 15 calendar days after the date of identification.

- b. Leaks shall be repaired to a leak free state using at least one of the following methods:
  - 1) Increasing the collection rate of existing wells.
  - 2) Repairing the landfill cover.
  - 3) Installing additional collection wells.
  - 4) Repairing the gas transfer path.

9. Whenever previously buried waste is brought to the surface during installation or preparation of wells, trenches, piping, or other equipment, or when solid waste is to be excavated and moved, the owner shall cover the excavated waste using fresh soil, plastic sheeting, vapor retarding foam, or other California Integrated Waste Management Board approved "Alternate Daily Cover", by the end of the working day or as necessary to prevent a public nuisance.

C. Requirements - Control Equipment

All landfill gasses collected pursuant to this rule shall be processed using control devices that meet the following requirements:

1. All control devices shall meet either of the following requirements:
  - a. Have a non-methane organic compound (NMOC) destruction/treatment efficiency of at least 98 percent by weight, or
  - b. Reduce the NMOC concentration at the outlet of the control device to 30 ppm measured as methane and corrected to 3 percent oxygen.
2. Flares used as control devices shall meet all of the following additional requirements:
  - a. Flares shall be of the enclosed ground type with automatic dampers, an automatic shutdown device, a flame arrester and continuous recording temperature sensors. During restart or startup there shall be a sufficient flow of propane or commercial natural gas to the pilot flame to ensure immediate ignition when in contact with landfill gasses.
  - b. NOx emissions shall not exceed 0.06 pounds per million BTUs of heat input.
  - c. CO emissions shall not exceed 0.20 pounds per million BTUs of heat input.
3. The owner shall demonstrate that each control device meets the requirements of this Section using the source testing procedures in Subsections H.4 and H.6 of this rule. Source testing shall be performed when the device begins operation. Flares shall be source tested to demonstrate continuing compliance every two years thereafter. All other control devices shall be source tested annually to demonstrate continuing compliance.

D. Reporting Requirements

The following reporting requirements shall each apply independently:

1. The owner shall immediately report to the APCD by telephone any malfunction, shutdown, or other event causing a reduction in the gas collection rate that the owner determines may result in a safety or health hazard.
2. If any portion of the gas collection system is shut down which results in a gas collection flowrate of less than 80 percent of baseline for longer than 24 hours due to scheduled or unscheduled maintenance activities, equipment breakdown, or any other reason,

the owner shall notify the APCD by telephone within 24 hours of the detection of such shutdown. A written follow-up report shall be forwarded to the APCD within 15 calendar days describing the duration and reason for the shut down.

E. Operation and Maintenance Plan

The owner shall submit to the APCO, and obtain written approval for, an operation and maintenance plan. As operating experience is gained and as site conditions change, the plan may be revised subject to the approval of the APCO. This plan shall at a minimum contain:

1. An engineering evaluation of the expected landfill gas generation rate, and design specifications for the gas collection system. Data concerning waste type, volume, tonnage and age shall be included if available.
2. A map showing the location, spacing and depths of collection wells and/or trenches, and the direction of flow through the header system to the control device.
3. A map indicating areas of steep slopes and any other safety hazards to personnel performing the surface emissions testing.
4. Sampling and analysis methods to be used by the owner to meet the requirements of this rule.
5. Specific techniques to ensure that overdraw is minimized. These may include; a schedule for periodic temperature measurements at wellheads, and a schedule for periodic gas sampling including gas analysis methods.
6. A schedule detailing inspection and maintenance intervals including dates and durations of expected system shutdowns.
7. Written justification for less than continuous operation of the gas collection system.
8. Operating procedures including system start-up, balancing, optimization, and shutdown.
9. Qualifications and training requirements for on-site personnel.
10. Safety precautions, protective clothing and equipment requirements, and emergency procedures.

F. Exemptions

1. The APCO may exempt solid waste disposal sites which can demonstrate that the concentration of total organic compounds measured as methane does not exceed 500 ppm by volume at any point near the surface of the solid waste disposal site, other than non-repeatable, momentary readings. Testing shall be performed using the procedures in Subsection H.1 of this rule following written notification to the APCO.

The owner of a solid waste disposal site which is equipped with an operating gas collection system may petition the APCO to shut down the collection system to demonstrate exempt status.

2. The exemption in Subsection F.1 shall extend for a period of one year and shall be reevaluated annually by the APCO until the owner completes postclosure requirements in accordance with California Code of Regulations Title 14, Chapter 3, Article 7.8.
3. This rule shall not apply to sites that have received only hazardous waste.
4. Section C shall not apply to control devices for which an APCD Authority to Construct was issued before September 17, 1991, provided that the control device has a NMOC destruction/treatment efficiency of at least 90 percent by weight or reduces the NMOC concentration at the outlet of the control device to 30 ppm or less measured as methane corrected to 3 percent oxygen, and annual source testing for NOx, CO and NMOC is performed simultaneously using the procedures in Subsections H.4 and H.6.

G. Recordkeeping Requirements

The following records shall be maintained in written form at the solid waste disposal site for a period of 2 years from the date of each entry and shall be made available to the district upon request:

1. Records of the gas collection flowrate, in SCFM, and the oxygen concentration, for each time that baseline conditions are established.
2. Records of continuous measurements (at least hourly records or a chart record) of the total gas collection flowrate, in SCFM, including notes describing the reasons for down-time.
3. Records of the oxygen concentration measured at the inlet to the control device before adding combustion air (readings on at least four days per week).
4. Records of all surface monitoring including the date, time, weather conditions, areas sampled, calibration records, and test results. Test results shall include the approximate location of each detected leak, the date of detection, the date of correction, and the repair method used.
5. A map indicating the location of areas with intermediate cover and areas with final cover. The map shall indicate the date of cover placement for each area with intermediate cover.
6. All records of perimeter well testing including testing performed pursuant to requirements listed in Title 14, California Code of Regulations and enforced by the California Integrated Waste Management Board.
7. If applicable, continuous records of flare temperature showing dates and times.
8. Source test reports showing the NMOC destruction/treatment efficiency and emissions in units of pounds per million BTU of heat input for the control device.

H. Test Methods

1. The following procedures shall be used to establish baseline

conditions pursuant to Subsection B.2 of this rule:

- a. The gas collection rate and landfill surface integrity shall be evaluated and brought to baseline conditions by testing for leaks and repairing all such leaks using the repair methods listed in Subsection B.8.b of this rule. Surface leak testing shall be performed using an instrument which meets the apparatus specifications of EPA Method 21. The instrument shall be calibrated before and after each test using zero air and an approximately 500 ppm methane standard calibration gas in accordance with the instrument manufacturer's recommendations.
  - b. Surface leak testing shall be performed by holding the detector probe two (2) inches from the landfill surface while walking a pattern of parallel paths not more than 50 feet apart over all surface areas specified in Subsection B.8.a. Cracks, holes, and other breaches in the surface as well as areas where buried waste interfaces with undisturbed, native soil shall also be evaluated. The owner is not required to monitor surfaces on steep slopes and other areas posing a hazard to testing personnel, however, leaks identified in such areas are not exempt from the provisions of Subsection B.8 of this rule.
  - c. Surface leak testing shall be performed only when the average wind speed is less than 5 miles per hour and instantaneous wind speed is less than 10 miles per hour, unless the APCO approves alternate wind speed limits based on demonstrated recurrent site-specific conditions. Average wind speed shall be determined on a 10 minute average using an on-site anemometer with a continuous recorder. Surface testing shall not be conducted when the surface is wet or when there has been rain during the preceding 72 hours. Surface testing of landfill surfaces that are normally wet (i.e., a golf course) may be performed when the surface is wet. APCD personnel may randomly identify leaks without regard to the above wind speed and surface condition requirements.
2. EPA Method 2D shall be used for the flowrate measurements required by Subsections B.2.a and B.4.
  3. EPA Method 3A shall be used for the oxygen concentration measurements required by Subsections B.2.b and B.3.
  4. The non-methane organic compound destruction/treatment efficiency of a control device shall be determined using the following equation:

$$\text{Efficiency} = 1 - \frac{\text{NMOC}_{\text{out}} \times \text{exhaust flow}}{\text{NMOC}_{\text{in}} \times \text{inlet flow}} \times 100 \%$$

where:

NMOC<sub>out</sub> = the measured concentration as methane of non-methane organic compounds in the exhaust, and

NMOC<sub>in</sub> = the measured concentration as methane of non-methane organic compounds in the landfill gas entering the control device.

- a. NMOCin and NMOCout shall be determined using EPA Method 25 sampling and analysis procedures modified to delete the condensate trap from the sampling train. Grab samples of landfill gas at the inlet to the control device, and exhaust from the control device shall be collected simultaneously and at a constant rate over a period of at least 10 minutes in identical clean Tedlar bags (or equivalent). Each sample volume shall be sufficient to perform two NMOC analyses and to measure the sample's oxygen content. The oxygen concentration shall be measured at both the inlet to the control device and the exhaust from the control device and in each grab sample using EPA Method 3A. Corresponding oxygen concentrations (grab samples and sampling port readings) must agree to within 1 percent oxygen.
- b. The inlet flow shall be determined using:
  - 1) EPA Method 2, or
  - 2) The continuous flow measuring system installed pursuant to Subsection B.4 of this rule. The continuous flow measuring system shall be used if the entire flow it measures is directed to the control device being tested.
- c. The exhaust flow shall be determined during the collection of grab samples using:
  - 1) EPA Method 2, for non-combustion control processes, or
  - 2) The "F" factor method described in the Code of Federal Regulations, Part 60, Section 60.45(f)(5). Since this method is used to calculate exhaust gas flowrate at 0 percent oxygen, the calculated flow rate must be expanded to account for the actual oxygen concentration in the flue gas using the following equation:

$$\text{exhaust flow} = F \times QH \times \frac{20.9}{20.9 - O_2 (\text{measured})}$$

where:

F = The "F" factor in dry standard cubic feet of exhaust gas at 0 percent oxygen, per million BTU of heat input, and

QH = Heat input in million BTU per hour, and

O<sub>2</sub> (measured) = The oxygen concentration in the exhaust stream measured in 4.a above.

5. NMOC emissions from the control device shall be determined using the following equation:

$$Q_e = F_e \times \text{NMOCout} \times 3.69 \times 10^{-8}$$

where:

Q<sub>e</sub> = NMOC emissions from the control device, in pounds per hour,

F<sub>e</sub> = Exhaust flow in standard cubic feet per hour at the

actual (measured) oxygen concentration, from Subsection H.4.c of this rule,

NMOCout = NMOC concentration in exhaust in ppm, from Subsection H.4.a of this rule, and

$3.69 \times 10^{-8}$  assumes a molecular weight of 14.2 for NMOC as carbon, and 385 cubic feet per pound-mole.

6. NOx and CO emissions from a control device in pounds per million BTU shall be determined using:
  - a. EPA Method 7E for NOx.
  - b. EPA Method 10 for CO.
  - c. ASTM D1826-77 for the gross (higher) calorific value (GCV) of landfill gas.
  - d. EPA Method 3A for Oxygen Concentration.
  - e. The calculations contained in 40CFR60.45(f)(5) and 40CFR60.46(f).

#### I. Violations

Failure to comply with any provision of this rule shall constitute a violation of the rule.

#### J. Definitions

For the purpose of this rule, the following definitions shall apply:

1. "Active Landfill": Any solid waste disposal site which received waste at any time during the past 6 months.
2. "Baseline Condition": A landfill is in its baseline condition when no leaks exist at:
  - a. Any location on the surface of the landfill covered by final cover.
  - b. Any location on the surface of the landfill which has been covered by intermediate cover for over 6 months.
  - c. Any location along the gas transfer path of the gas collection system.
3. "Control Device": Any device that disposes of the collected gas by one or more of the following means: combustion; gas treatment and subsequent sale; sale and processing offsite; other equivalent methods.
4. "Decomposable Solid Waste": Any material which is not Non-decomposable Inert Solid Waste.
5. "Destruction/Treatment Efficiency": A measure of the ability of the control device to combust, transform, or otherwise prevent the emissions to the atmosphere of non-methane organic compounds in landfill gas.

6. "Energy Recovery Equipment": Any equipment that uses landfill gas to produce useful energy.
7. "Excavation": Any movement of landfill cover that triggers the notification requirements of any government agency.
8. "Final Cover": Cover material that is applied on areas where additional cells are not to be constructed, and therefore, must be highly resistant to erosion.
9. "Gas Collection System": A series of collectors and associated piping and equipment which provides a gas transfer path to the control device.
10. "Intermediate Cover": Cover material that is applied on areas where additional cells are not to be constructed for extended periods of time, and therefore, must resist erosion for a longer period of time than daily cover.
11. "Landfill": Any location within a solid waste disposal site used for the permanent disposal of waste where the organic portion of the waste is subject to natural processes of aerobic and anaerobic decomposition.
12. "Landfill Gas": Any untreated, raw gas derived through the decomposition of organic waste deposited in a solid waste disposal site, from the evolution of volatile species in the waste, or from chemical reactions of substances in the waste.
13. "Leak": Any point where the concentration of total organic compounds measured as methane exceeds 1000 ppm by volume except non-repeatable momentary readings.
14. "Leak Free": The absence of the evidence of "Leaks".
15. "Non-decomposable Inert Solid Waste": Materials which do not degrade biologically to form landfill gas. Examples include, but are not limited to, earth, rock, concrete, clay products, inert tailings, plaster board, glass, inert slag, asbestos, and demolition materials containing less than 10 percent by volume wood and metals.
16. "Non-methane Organic Compounds (NMOC)": Any compound in a gaseous state at standard temperature and pressure which contains at least one atom of carbon except: methane, carbon monoxide, carbon dioxide, metallic carbides, carbonates, and carbonic acid.
17. "Non-repeatable, Momentary Readings": Indications of the presence of organic gasses using a detector meeting the apparatus requirements of EPA Method 21 which persist for less than 5 seconds and do not recur when the sampling probe is placed in the same location for at least twice the response time of the instrument.
18. "Owner": For the purpose of this rule the owner is the fee owner of a solid waste disposal site and the person who through lease, or other arrangement with the fee owner is responsible for complying with all applicable federal, state and local requirements for landfill gas emissions, provided that upon the expiration of such person's responsibility for landfill gas emissions under such lease or other arrangement the fee owner shall be deemed the owner. Where specific requirements of this rule apply to equipment at the solid

waste disposal site that is owned or operated by a second party other than the fee owner, the second party shall be deemed the owner for the purpose of such rule requirements as they relate to such equipment.

19. "Perimeter": The outer boundary of the solid waste disposal site property.
20. "Quarter": The months that define a "quarter" are: January, February and March (1st quarter ends on March 31); April May and June (2nd quarter ends on June 30); July, August and September (3rd quarter ends on September 30); October, November and December (4th quarter ends on December 31).
21. "Solid Waste": All putrescible and non-putrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial waste, manure, vegetable or animal solid and semisolid wastes, sludge, and other discarded solid and semisolid wastes.
22. "Solid Waste Disposal Site": Includes the place, location, tract of land, area, or premises in use, intended to be used, or which has been used for the landfill disposal of wastes and/or the evaporation of liquid chemical waste.

K. Compliance Schedule

1. The owner of any solid waste disposal site subject to the requirements of this rule shall demonstrate compliance with this rule no later than 18 months after APCD approval of the compliance plan.
2. The owner of any solid waste disposal site subject to the requirements of this rule shall submit a compliance plan no later than March 16, 1992, for approval by the APCD. The compliance plan shall contain at a minimum:
  - a. A schedule of actions, indicating projected completion dates, that will be taken to demonstrate compliance with all provisions of this rule. Such actions may include but are not limited to:
    - 1) An evaluation of the effectiveness of existing extraction equipment, surface integrity, and control devices to determine if there is a need for modification or installation of additional equipment or surface cover.
    - 2) The installation or modification of additional equipment and/or surface cover.
    - 3) Surface sampling and control device source testing to demonstrate final compliance.
  - b. If exemption pursuant Subsection F.1 is claimed, written notification of proposed surface testing dates.
  - c. For existing gas collection systems, an operation and maintenance plan for the existing system as required by Section E of this rule.

- d. If the installation of additional equipment is planned, an application for an APCD Authority to Construct.
- 3. Any person planning to re-open a previously closed solid waste disposal site shall submit a compliance plan as specified in Section K at least 180 days prior to receipt of waste.
- 4. Any person planning to open a new solid waste disposal site shall:
  - a. Submit a compliance plan as specified in Section K at least 180 days prior to receipt of waste.
  - b. Make provisions for the installation of a collection system and demonstrate compliance when at least 100 SCFM of combustible gas is available for collection.
- 5. The owner of any solid waste disposal site which is not subject to this rule because less than 500,000 tons of decomposable waste has been placed at the site, shall demonstrate compliance when 500,000 tons of decomposable waste has been placed. The owner shall submit a compliance plan as specified in Section K at least 180 days prior to becoming subject to this rule.